In several stress tests, the Dell Precision 5820 Desktop Tower Workstation ran quieter than desktops from HP and Lenovo

Additionally, the Dell Precision 5820 ran at a more consistent loudness than its competitors

Employees may not spend tons of time thinking about office noise, yet sometimes it poses a distraction they don't notice until it's the end of the day and they're wondering why they've accomplished so little of their daily to-dos.

At Principled Technologies, we compared the noise levels of three different workstations to determine which may pose less of a distraction to employees working close by. We tested the following devices:

- Dell Precision 5820 Desktop Tower Workstation
- HP Z4 G4 Workstation
- Lenovo ThinkStation P520

In our tests, the system from Dell ran more quietly than the devices from HP and Lenovo in five use cases, suggesting the Dell Precision 5820 would make less noise during a variety of real-world user work.

The Dell Precision 5820
ran up to
1.1 sones quieter
than comparable workstations from HP and Lenovo

WHAT IS A SONE?

A sone is a measurement of how loud something sounds to human ears. Sones work on a linear scale—so a noise measured at 2 sones would sound twice as loud as a 1-sone sound.

See page 2 for more information.

The devices we tested

The workstations we tested each had a single processor and two disk drives.

Dell Precision 5820 Desktop Tower Workstation

vs.

- HP Z4 G4 Workstation
- Lenovo ThinkStation P520

How we tested

Overview

We tested workstations from Dell, HP, and Lenovo to determine how loud a user might perceive the machines to be while performing work activities.

We placed each device on a table in a sound booth treated to isolate itself from outside noise. We recorded sounds from each device with a Neumann KU 100 Dummy Head Microphone routed through an external Focusrite Saffire Pro 40 audio interface to a completely different computer outside the sound booth. To simulate how a human user might experience the sound of each device, we placed the microphone 1.2 meters from the ground and 0.5 meters from each test system.

To analyze the sounds we recorded, we used ArtemiS SUITE Acoustics software, which delivers a reading for the loudness of each recording in sones. We recorded the sound each workstation generated under five conditions:

- **Idle:** OS loaded to the desktop with no workloads or user applications running
- **80% CPU stress:** BurnInTest™ workload tuned to use 80 percent of processor resources
- **100% CPU stress:** BurnInTest workload tuned to use 100 percent of processor resources
- **GPU stress:** FurMark benchmark running a graphics-intense workload
- **Disk stress:** Iometer workload generator running a storage-intense I/O workload

More context for sones

Sones are often used to rate the perceived loudness of bathroom and computer fans. According to Scott Spyrka, commercial electrician and owner of the California-based Spyrka Electric, the quietest fans measure at 1.0 sones or less. He says fans rated 1.0 to 2.0 sones are "also very quiet," while fans rated at 4.0 sones or above aren't quiet at all.[1]

"For nearly imperceptible noise," writes Spyrka, "you want 0.3 or less."[2]

Combining Spyrka's assessments with guidelines from the Home Ventilating Institute (HVI),[3] we see a clearer picture of the sone:

>4.0	Standard television noise
3.0	Typical office noise
1.0–2.0	Quiet
1.0	A quiet refrigerator
0.5	Rustling leaves
<0.3	So quiet you almost can't hear it

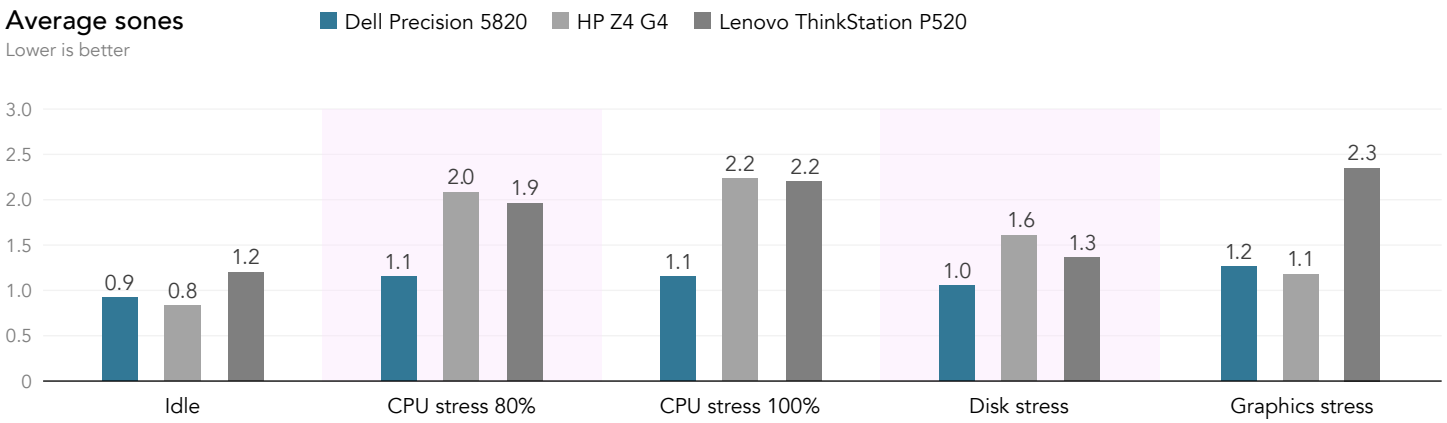
Results context

Human attention can be more fragile than you'd expect. A 2011 study published in the British Journal of Psychology provided evidence that background office noise "can disrupt performance on memory for prose and mental arithmetic tasks."[4] In a study from University of California, Irvine, researchers found people were more stressed and frustrated with their work after being distracted.[5] One of the researchers, Gloria Mark, told Wall Street Journal that **"Once thrown off track, it can take some 23 minutes for a worker to return to the original task."**[6]

While many turn to noise-canceling headphones to escape office sound pollution, doing so can isolate users from colleagues and collaborators. To maintain a productive work environment, businesses may consider addressing common sources of noise, such as noise from computers.

Our results

Overall, the Dell Precision 5820 produced less noise than both competitors when running demanding workloads. The Dell Precision 5820 also ran with much more consistent sound levels throughout each test. Below are graphs of our results with analysis:



Idle

The Dell and HP devices were about as quiet as one another, while the Lenovo ThinkStation ran at 1.2 sones.

80% CPU stress

The Dell Precision ran at just above 1 sone while the other devices ran at around 2 sones. The HP workstation ran more than twice as loudly here than in the idle test.

100% CPU stress

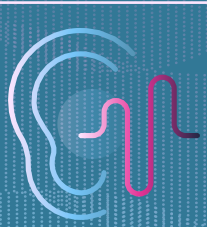
The Dell Precision remained about as quiet as it was at 80%, while the other devices produced even more noise than before.

Disk stress

The Dell Precision remained at about 1 sone, while the other devices ran about half a sone louder.

Graphics stress

The Dell and HP devices ran at a little above 1 sone, while the Lenovo ThinkStation ran at over 2 sones.



The Dell Precision 5820 ran up to
1.1 sones quieter

Conclusion

Eliminating sources of noise in the workplace could prevent unwanted distractions, which can in turn lead to greater productivity among employees. In a series of tests, we found that a Dell Precision 5820 Desktop Tower Workstation was quieter than workstations from HP and Lenovo. Additionally, because the Dell Precision 5820 ran at a relatively consistent sound level, a user may be less likely to notice or be distracted by small increases in loudness.

1 Scott Spyrka, "Bathroom Fan Noise: Read This Before You Buy a New Bathroom Fan," accessed April 25, 2019, https://spyrkaelectric.com/bathroom-fan-noise-read-this-before-new-fan/.

2 Scott Spyrka, "Bathroom Fan Noise: Read This Before You Buy a New Bathroom Fan."

3 "Bathroom Exhaust Fans - A Consumer Guide," accessed April 25, 2019, https://www.hvi.org/resources/publications/bathroom-exhaust-fans/.

4 Simon Banbury and Dianne C. Berry, "Disruption of office-related tasks by speech and office noise," accessed April 23, 2019, https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.2044-8295.1998.tb02699.x.

5 Gloria Mark, Daniela Gudith, and Ulrich Klocke, "The Cost of Interrupted Work: More Speed and Stress," accessed April 25, 2019, https://www.ics.uci.edu/~gmark/chi08-mark.pdf.

6 Rachel Emma Silverman, "Workplace Distractions: Here's Why You Won't Finish This Article," accessed May 6, 2019, https://www.wsj.com/articles/SB10001424127887324339204578173252223022388.

Read the science behind this report at http://facts.pt/fup1ure ▶

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